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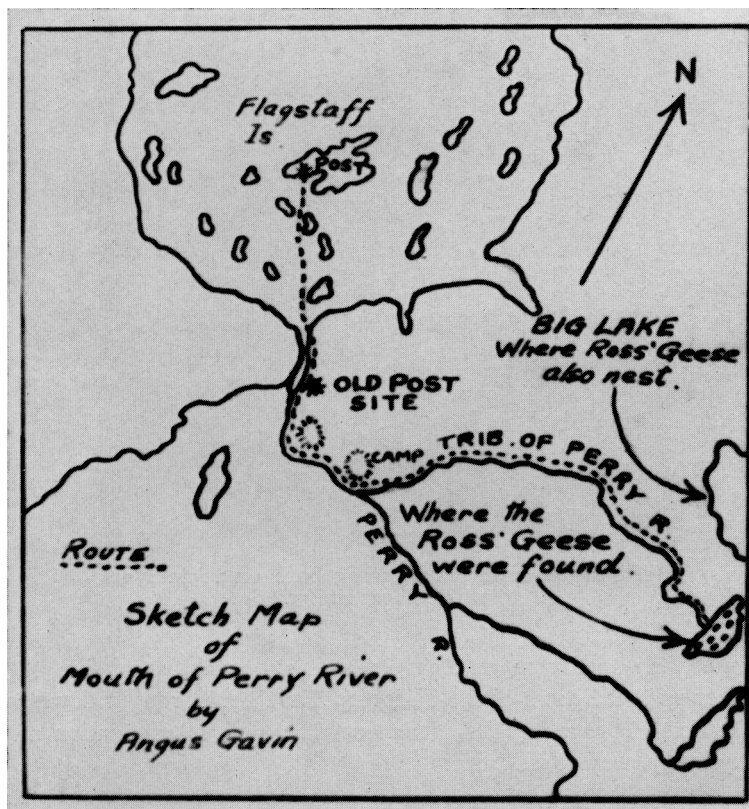
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First picture ever taken showing elusive Ross's Goose on newly discovered nesting grounds in Arctic. Explorer's boat in background.



## Ross's Goose Breeding Grounds Discovered

B. W. CARTWRIGHT

*Chief Naturalist, Ducks Unlimited (Canada)*

AS TOLD TO ORMAL I. SPRUNGMAN

Beaching their boat on an unnamed lake at the head of an unmapped river, Angus Gavin and Ernest Donovan, Hudson's Bay Company post managers in the far north, recently looked down upon the nest and eggs of the elusive Ross's Goose—the first white men in the world to discover its heretofore unknown nesting territory.

By virtue of their successful search, which has been the prime objective of explorers and naturalists for the past 80 years, the last remaining "unknown" in the list of North American birds has at last been



Nests were built on a grassy base on rock. Note white down lining.

cleared. Two specimens of Ross's Goose and a clutch of five eggs, together with the news of the discovery, have been brought down out of the north country by Donovan on his return to civilization after nearly five years in the Arctic.

On the first part of their journey over sea ice, Donovan, manager of the King William Island post, joined Gavin, manager of the Perry River post on Flagstaff Island, 200 miles westward in Queen Maude Gulf, Arctic Ocean. With an Eskimo komatik, they hauled their boat and equipment to open water near the mouth of the Perry River, which flows into Chester Bay. Here they trekked the turbulent Perry for 12 miles to where an unmapped river entered from the southeast.

At this junction, Eskimos were found camping and four husky natives were hired as guides. Fifteen more miles they pushed onward, portaging where necessary, until finally they approached an unknown lake pox-scarred with numerous, rocky islands of low elevation.

Hovering over these islands—there were almost 300 of them—were Ross's geese flying about in all directions. On one island, where they grounded their boat, lay many nests, ranging from three to 30 feet apart. This island was only about 500 yards long by 50 wide. Others were even smaller.



Built on rock with a grassy base, the nests were well lined with white down, soiled to a dirty grey appearance. Those examined held from two to six creamy white eggs. Some had only two or three, a few had six, while four eggs made up the most common clutch. Several eggs were gathered by the natives, who ate them raw.

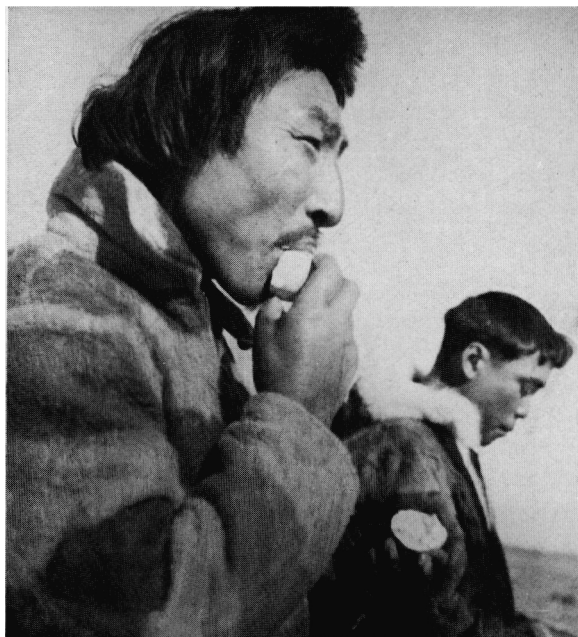
Eskimos claimed that the main breeding grounds were on similar islands in a larger lake, not shown on existing maps, about six miles to the east.

As the men approached, less bewildered birds now flew off their nests and milled around, protesting loudly. Crawling on their bellies to within five or six feet of the nearest nest, the pair lay still. Finally, the mother bird returned to resume her duties, unmindful of intruders.

From earliest times, Hudson's Bay Company officials have known this species. Samuel Hearne called it the "Horned Wavey" in 1795, but since no specimens were sent out, the bird remained unknown to



Some nests contained as few as two and as many as six eggs. The average clutch held four eggs.  
Eskimo guides feasted on them raw.



Eskimos hired as guides displayed healthy appetites for waterfowl eggs, which they ate raw with great relish. Some eggs even contained embryos.

science until 1861. In that year, specimens were received from Bernard Rogan Ross, a chief factor of the company, from Fort Resolution, Great Slave Lake, by the Philadelphia Academy of Sciences. John Cassin, curator of birds at the academy, named it in Ross's honor.

Roderick MacFarlane, another chief factor, searched the western Arctic in vain for a trace of this goose. In fact, many explorers have hunted without success along the Arctic coast and interior. South of Queen Maude Gulf, the territory is unmapped and unexplored.

The Ross's Goose winters in the Sacramento and San Joaquin Valleys in California, migrating across the mountains through eastern Montana, north to the Athabaska Delta and Great Slave Lake. After a three-week resting and feeding period, the bird disappears in a northeasterly direction towards its hitherto unknown breeding grounds.

*See the article by Edward R. Ford entitled "Notable Discoveries of Birds' Eggs" in the March, 1941 issue of The Chicago Naturalist, pages 15-17.*

# Feathered Migrants of the Posts

RAYMONDE JANSSEN

Photographic reproductions by the author

Those of us who are interested in the study and observation of birds are destined for an agreeable surprise if we permit our attention to wander for a few moments into the realm of postage stamps. We are inclined to think of stamps only as little bits of paper used to transmit our letters back and forth. Actually they are much more than this. Because they travel from one corner of the world to the other, they have become one of the greatest advertising agents within the powers of the nations. The pictures on postage stamps present scenes and stories about their home countries which might be difficult to disseminate effectively in any other way. They acquaint the world with the rulers, patriots, histories, products, and industries of the countries issuing them. It is of interest to us, then, to take account of the importance devoted to birds by the various stamp issuing countries of the world, and the reasons which have impelled the picturing of birds on stamps.

Approximately eighty-five nations have issued a variety of nearly 5,000 different stamps which portray birds ! This is exclusive of about 700 double-headed eagles and conventionalized designs and coats-of-arms of the nations. The first postage stamp was issued by Great Britain in 1840, a hundred years ago. In 1845, the first stamp picturing a bird was issued by Switzerland. It depicted a dove, or carrier pigeon, carrying a letter in its beak. The stamp is now quite rare, and is worth several hundred dollars to collectors.

It is generally accepted that carrier pigeons were the first air mail messengers, having been used for this purpose for many centuries. One of the earliest records of this nature concerns a young Greek athlete by the name of Taurasthenes who left his home in Aegina to take part in the ancient Olympic Games at Olympia. Having been victorious, he desired to tell the folks at home as quickly as possible. For this purpose, he had brought with him a carrier pigeon. Unfortunately, he was illiterate; and so instead of writing a message to be attached to the bird, he dyed the pigeon's feathers purple and dispatched it on its way. Since purple was the color of victory, the message was properly interpreted, and we are told that Taurasthenes was given an appropriate welcome upon his return home. Thus, the pigeon was not only the messenger, but the message as well!

As an emblem of fast or special delivery, the carrier pigeon has been pictured on the stamps of many countries. Some are in the form of



Fig. 1, Doves and Carrier Pigeons.

conventionalized designs, or show the birds in the unnatural attitude of carrying the messages in their beaks. More frequently, however, actual likenesses of the birds are shown. Such a stamp was issued by the late nation of Czecho-Slovakia in 1918 (fig. 1) . An interesting conventionalized carrier pigeon was pictured by Germany in 1922 (fig. 1).

Pigeons, or doves, are also symbolical of peace, and have been pictured in this capacity by numerous countries. A stamp showing a dove alighting on an olive branch was issued by Japan in 1919 following the close of the World War (fig. 1) . It is, without question, one of the most beautiful and artistic of all stamps.

The eagle seems to have elicited the greatest attention, however, having been pictured on the stamps of more than twenty nations, including our own United States. It is, in fact, the only bird which has ever been pictured on the stamps of our country. A possible exception occurs if revenue stamps are considered, for ducks are shown on the stamps which must be affixed to hunting licenses. The popularity of the eagle is the result, no doubt, of its significance in representing power, bravery, and endurance. Good examples may be seen on the stamps of the tiny country of Liechtenstein and of Germany (fig. 2).

Corresponding to the eagle of North America and Europe, is the condor of the South American Andes. It is an immense vulture, four feet long, with a wingspread of nine or ten feet. It inhabits altitudes of 10,000 to 16,000 feet where it soars amid the rocky crags in search of food. The condor is considered to be the greatest of gliders, having been observed to soar for periods up to a half hour without flapping

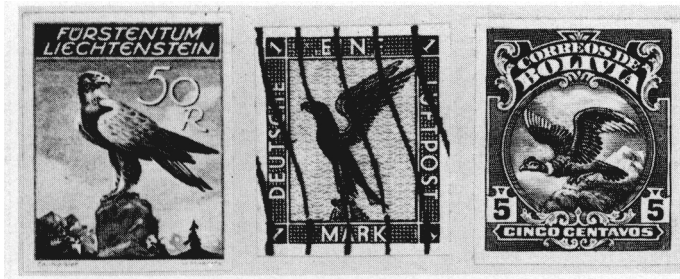


Fig. 2, Eagles and Vulture.

its wings. It is not surprising that we should find this great bird pictured on stamps from Colombia, Ecuador, Chile, and Bolivia (fig. 2).

The commercial value of birds has been a determining factor in showing them on the stamps of numerous countries. Such a bird is the ostrich, pictured on the stamps of various African countries (fig. 4). Ostrich feathers have been an important article of commerce for many decades. The wild supply has been insufficient to meet demands and has resulted in the establishment of ostrich farms in the United States and abroad. The birds, of course, are not killed for their plumage, the feathers merely being plucked at appropriate times. Related birds, such as the emu and cassowary, have been pictured on stamps of Australia and Borneo.

Also prized for their beautiful plumage are the bird-of-paradise, the lyre bird, and the egret. The bird-of-paradise, which is confined to the South Sea island region, is a near relative of the crow. The plumage of the male, whose lengthy brownish-yellow feathers have long been coveted by the millinery trade, is considered to be unrivalled in beauty. It has been the custom of natives to shoot the birds during the breeding season when the males are engrossed in courting tactics. Enforcement of laws discouraging trade in the feathers has done much to save this beautiful bird from extinction. It is pictured on postage stamps of New Guinea (fig. 3). The lyre bird, which is native to Australia, is somewhat smaller than a pheasant. The male has three kinds of brownish tail feathers which, when displayed, present the form of a lyre. Ordinarily only one egg is laid during each incubation period so that reproduction among the species is relatively slow. Australia has issued several stamps showing the lyre bird (fig. 3).

One of the birds which has suffered most from the attacks of man is the egret. So far as our own country is concerned, this treatment is a blot upon our nation's history. The bird, which is snowy white,

possesses long dorsal plumes from which the barbules are absent, giving them a beautiful silky appearance. For this reason the feathers were sought for women's headwear. The only way to obtain the feathers is by shooting the birds. This is done during the season when the nestlings are being reared. At this time also the plumage of the adults is in best condition. At other times the birds are so wild that they can seldom be approached within shooting range. For best results, the plume-hunters wait until the young are hatched, at which time the paternal instinct is so strong that the old birds return to the nest again and again even though the guns are booming all around. At one time the Carolina and Florida regions teemed with thousands of these magnificent birds ; but the inroads of plume-hunters nearly annihilated them. Governmental agencies, fortunately, awakened just in time to save the egret from disappearing forever from our shores. In Africa, the egret is more plentiful. Pictures of the bird may be seen on stamps from Liberia (fig. 3) .



Fig. 3, Birds with Exceptional Plumage.

Also important commercially is the product known as guano, which is the excrement of large sea birds belonging to the gannet group, sometimes called booby birds. The name, gannet, is thought to have been derived from the Old English *pan*, meaning gander, or goose-like. The birds are highly gregarious, and nest in great colonies along isolated coasts and on uninhabited islands, principally off the South American coast. Deposits of guano are found in great quantities in these areas, and because of high phosphorus and nitrate content the guano is valuable as a fertilizer. In this case the bird itself is not harmed, only the guano being collected and shipped away. Boobies have been pictured on the stamps of Peru and the Cayman Islands (fig. 4).



Fig. 4, Birds of Commercial and Sporting Value.

Probably the most widespread and most important commercially, of all birds, is the ordinary domestic chicken; yet only one country thus far has seen fit to place the likeness of the fowl upon its postage stamps. This was done by Bulgaria in 1938 (fig. 4). Swans and geese have appeared on the stamps of many countries. Notable among these is Australia (fig. 4).

Game birds are of two categories—those which are hunted for food or sport, and those which are trained for use in hunting other birds and small mammals. In the former group is the Argus pheasant, pictured on the stamps of North Borneo (fig. 4). This bird is six feet long from beak to tip of tail, and is one of the most beautiful of the pheasants. It displays its plumage by spreading somewhat after the manner of peacocks, and when so doing exhibits its feathers which are ornamented with beautiful metallic spots resembling eyes. The peacock itself has been pictured on stamps of India.

For nearly four thousand years the falcon has been used in the aristocratic sport of falconry which is still practiced in some European and Asiatic countries. For its size, the falcon is the most powerful bird of prey. Trained birds are therefore used to pursue and retrieve smaller birds or even small mammals such as hares and rabbits. Among the various stamps picturing falcons, perhaps the most interesting is the triangular airmail stamp of Iceland, issued in 1930 (fig. 4).



Fig. 5, Birds of Local Interest.

Some birds are of little importance outside of their native habitats. Nevertheless, because of unusual interest, many of them have been pictured on stamps of the countries where they live. No doubt, the most familiar of these is the penguin which has become well known as a result of publicity given it by recent Antarctic explorations. It is a flightless sea bird, known only from the southern hemisphere. There are several species, some of which are quite large, standing four feet high, and weighing up to ninety pounds. They occur in considerable numbers on the south polar continent, but also range northward to South America where we find them pictured on stamps from the Falkland Islands (fig. 5).



Even more strange than the penguin, is the kiwi of New Zealand (fig. 5) . It, too, is a flightless bird, but is comparatively small, being about the size of a chicken. Its wings are almost entirely aborted, its beak is very long, and the nostrils are near the end of the beak. It feeds on earthworms, and is generally nocturnal in its habits.

The tropical hornbill, named from the horn-like extension on its beak, is shown on stamps of Borneo (fig. 5) . It is allied to the kingfishers. The bird is of interest because of its peculiar nesting habit. The nest is made in the hollow of a tree, and when the hen begins to sit on the eggs the male plasters up the entrance with mud, except for a small opening. Through this he feeds the female during the incubation period, after which she is released.

The largest of the true kingfishers is a native of Australia. It is called the kookaburra, or laughing jackass, and is about the size of a crow (fig. 5) . It derives the latter name from its peculiar call which resembles human laughter so closely as to make listeners themselves burst into laughter. Because it feeds on snakes, other small reptiles, grubs, and caterpillars, the bird has become regarded as a valuable bird in the Australian forests. It does not resort to water like other kingfishers, and a fish diet is unknown to it.

Other native birds which might be mentioned are parrots and cockatoos which inhabit tropical countries, and which have been pictured on stamps from Tonga and Borneo (fig. 5) . The New Zealand fantail is a small flycatcher which has a peculiar habit of spreading its tail feathers while darting after insects (fig. 5) . The plantain-eater, or touracou, of Africa possesses a beautiful purple plumage, and may be found on the stamps of Liberia (fig. 5) . It is characterized by a high crest which extends forward over its beak. Migratory birds, such as cranes, are shown on the stamps of various countries of the Old World where these birds range, extending from Central Europe to Central Africa (fig. 5).

Some birds have been considered as sacred by primitive peoples, and may embody a deity themselves or simply be a representative of the deity. Foremost of these is the quetzal of Guatemala. It has been pictured many times on the stamps of this Central American republic (fig. 5) . The name comes from the ancient Aztec language, and means "green-feathered fowl." The plumes, which vary from two to three and a half feet in length, are a rich metallic blue-green. The feathers on the back are bright green, and those on the underparts of the body are a vivid scarlet. The central tail feathers are black, and the outer ones white. It is slightly smaller than a pigeon, and in beauty is a close rival of the bird-of-paradise. The quetzal was worshiped as a deity by the ancient Toltec and Aztec races. Their tribal laws permitted

capture of the bird in order to obtain its feathers, but to anyone found killing the quetzal, the penalty was death. The feathers could be retained only by the king or high priests who used them in making tapestry and pictures for decoration of the temples. Even though raised from infancy, it has been found impossible to keep the bird in captivity for any length of time. For this reason, the quetzal is used by modern Guatemalans as an expression of a free people, and as such is included in their national emblem.

The value of birds not only commercially, but aesthetically, and as a means of preserving the natural balance, has never been questioned by the naturalist and scientist. But such recognition by governmental agencies, to the degrees indicated by these little bits of paper called postage stamps, is truly remarkable. One of the most effective means of calling attention to birds and fostering their conservation is by this comparatively simple trick of depicting them on stamps which are carried on letters every day to all parts of the world. These are the feathered migrants of the post.

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## Test Your Nature Lore

True or False?

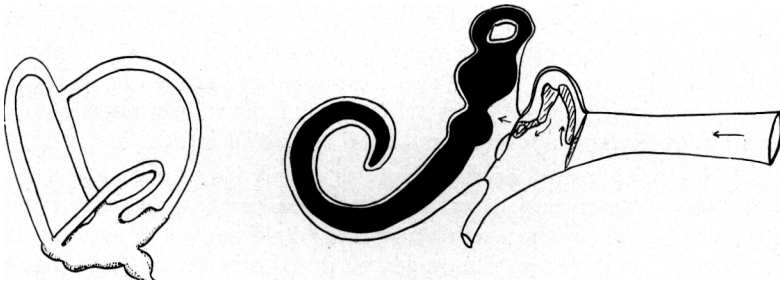
1. The seventeen year locust is not a locust.
2. The crayfish is a fresh-water relative of the lobster.
3. All spiders spin silk.
4. Insects have three pairs of legs.
5. A black widow spider is usually about three inches in diameter.
6. Lady-bird beetles are very destructive garden pests.
7. All mosquitoes will bite if given a chance.
8. There are over 600,000 different kinds of insects.
9. The common house-fly spreads disease by its bite.
10. All insects can properly be called "bugs."

*Answers on Page 84.*

# Mammalian Ears, Inside and Out

DONALD M. HATFIELD

The part that the sense of hearing plays in the daily lives of most of us is well known, though its importance may not at all times be fully appreciated. Most land dwelling vertebrate animals are more or less dependent upon their ears, principally to warn them of danger and, in certain specific instances, to aid them in a search for food. In man's activities, however, there occurs but little of the kind of danger which a keen hearing sense may aid him in evading. Rather, his ears form an integral part of the most complicated system of communication known to occur in the Animal Kingdom.



Left—diagram of semicircular canals. Right—diagram of mammalian ear, showing outer, middle and inner chambers; path of sound is indicated by arrows.

Among mammals, the ear performs two principal tasks; it collects and transmits sound waves to a sensory organ which in turn transforms them into nerve stimuli, and it aids in maintaining body balance. For the former, the structure has evolved into three chambers—an external, a middle, and an inner. The outer ear, part of which we see as the "ear," consists of a protuberant pinna and an auditory canal extending inward to the tympanic membrane or eardrum. The middle ear simulates a small two-headed drum, since its outside wall includes the eardrum and its inside wall hears two small membranes which separate the middle and the inner chambers. To aid in the conduction of sound waves across the middle ear, there is a chain of three small bones which link the outer and inner membranes and thus serve to carry vibrations to the inner ear.

The inner ear contains the sensory structures which transform the sound waves into nerve impulses which in turn are transmitted to the brain. Also within the inner ear are the balancing organs which enable

the mammal to maintain its equilibrium. These consist of three semicircular canals, lined with hair-like cells and containing a fluid which flows back and forth over these cells when the head is tipped this way or that. The canals are so arranged in three planes, one horizontal and two vertical, that every possible angle of the head can be "recorded" and adjustments made to compensate, if necessary.

So far as is known, external ears did not occur until the vertebrates left the water and began to crawl about on land. Air transmits vibrations much less efficiently than water, hence some sort of sensitive collecting device was needed. As the body was lifted off the ground, the need for better balancing organs also contributed to the development of more and more complex ears, with a great number of variations, largely correlated with the environment in which the animals lived.

Land mammals (our principal concern here) may be divided into three more or less well-defined groups, on the basis of habit and customary environment. These are: *fossorial*, or subsurface, digging forms; *terrestrial*, those forms which spend the major part of their lives foraging about above ground ; and the *aerial* forms, the bats.\*

The fossorial forms, or those species which spend a great part of their lives underground, have very little use for external ears, since vibrations set up in the earth affect the whole body and a collecting structure is unnecessary. The mole has practically no external ears at all ; the pocket gopher has small external ears but, like those of the various ground squirrels, they are short and held tight to the head. The advantages of short ears to a burrow-dweller are obvious—he doesn't wear them off on the ceiling! It might well be pointed out here that the badger and the weasels, carnivores which prey to a considerable extent upon burrowing rodents, also have relatively unobtrusive external ears.

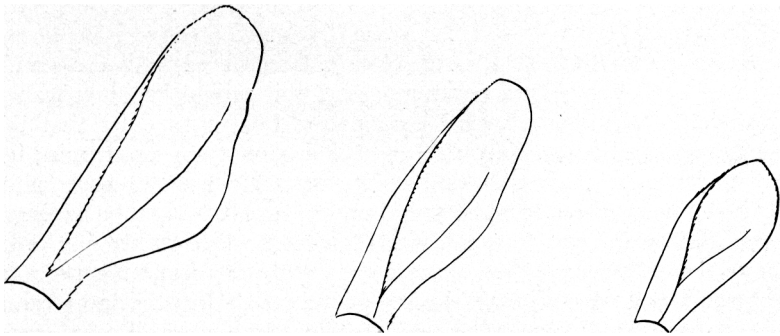
At the opposite extreme are the aerial mammals, the bats. Among these we find species which have relatively enormous external ears; it appears that bats hear remarkably well. Recent studies have shown that bats avoid obstacles by emitting rapid twittering cries, which are too high-pitched for the human ear to record. The sound waves so produced are reflected back to the bat's ears by any obstruction which may be in its path of flight. It can then turn to avoid the obstacle which it may not be able to see. The whole process is similar to the modern method of depth-sounding by boats—a tone is sent toward the bottom of the ocean and the time for its reflection as an echo indicates the depth of the water.

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\*There are other, equally well-defined categories such as *arboreal*, *cursorial*, etc. For convenience these have been lumped under *terrestrial*.

Aside from this very important function of "seeing," the ears of bats are valuable aids in obtaining food. All North American bats are insect-eaters, and with very few exceptions catch their food on the wing. It is evident that a well-developed sense of hearing assists them in locating the insects with sufficient accuracy. Some idea of the accuracy necessary may be gained by lying in bed at night, listening to a mosquito buzzing around your head, and attempting to hit it with your hand, much less catch it in your teeth.

The great majority of mammals are primarily surface-dwellers; they may nest in trees or beneath the ground, but the greater part of their time is spent foraging on or near the surface. As might be expected, however, there are a great number of variations in ear structure, depending upon the habit and environment of the mammal. One of the most striking large-scale variations is that correlated with temperature.



Outline diagrams of external ears of (left to right) the Allen jackrabbit, black-tailed jackrabbit, and snowshoe hare.

According to "Allen's Rule," the mammals living in colder climates tend to have shorter appendages than those living in warmer climates. Thus the Allen jackrabbit of southern Arizona has ears which average 145 millimeters long. Those of the black-tailed jackrabbit of Kansas average 105 millimeters, of the white-tailed jackrabbit of the Dakotas, 95 millimeters, and of the snowshoe hare of Canada, 65 millimeters. The explanation seems to be that large external ears would radiate too much of the animal's body heat in cold climates and expose it to danger from freezing. Experiments carried on in the laboratory with common white rats and mice show that individuals raised to adulthood in low temperature cabinets have shorter ears than individuals raised in high

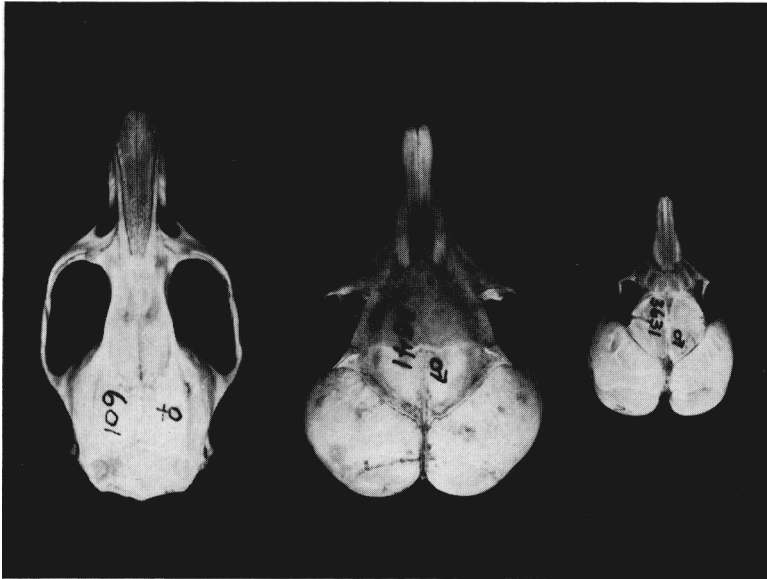
temperature cabinets. We see such effect in action with the opossum in North America. This mammal appears to be gradually spreading northward and it has reached our northern tier of states in several places. It has a long, hairless tail and relatively large naked ears which are not suited to a cold climate. Occasionally opossums are found with parts of the tail and ears frozen off. If opossums continue to live in this northern country, it is reasonable to assume that over a long period natural selection will eventually produce short-eared, short- Or hairy-tailed animals.

Another example of Allen's Rule as it applies to ears is offered by the foxes of North America. The large-eared desert fox of the Southwest has ears twice as long as those of the Arctic fox of Canada. The red and grey foxes of the more temperate regions have ears which are midway in length between these two extremes.

There are many other factors beside temperature which serve to determine length of external ear. Many of these are incompletely understood and it is probable that some are completely unknown. We find, for instance, that a northern race of white-footed mice has larger ears than a closely related southern race. Considered from the standpoint of the effect of temperature alone, this would be inexplicable. However, a seemingly logical explanation lies in the fact that the northern form lives in the forest, where it cannot see its enemies for any distance, and must depend on its ears and nose to warn it of danger. The southern form, a typical prairie dweller, might be expected to depend on its eyes to a considerable extent, since its view is ordinarily less obstructed than that of the northern form. Observations made at the University of Minnesota indicated that the large-eared race reacted more quickly to sounds than did the small-eared race. There was no evidence, however, that the latter could see any better than the former.

A striking illustration of the dependency of mammals upon their ears is offered by meadow mice. These largely diurnal mammals tend to remain underground on windy days. when the rustling of the leaves and grass by the wind would obscure sounds made by approaching enemies.

It was mentioned previously that the ear also plays a large part in balance, and that the semi-circular canals are the important organs in this respect. We would expect that those mammals with a need for more delicate balance, for example, tree squirrels and jumping forms such as kangaroo rats, might have better developed or more sensitive balancing organs. Simply on the basis of observation there can be little doubt that these organs are more sensitive in tree-dwelling or jumping animals. However, dissection shows that the semi-circular canals them-



Skulls of three desert-dwelling rodents; (left to right) the woodrat, which has large external ears and small bullae; the kangaroo rat and the kangaroo mouse, which have small external ears but large bullae.

selves are not enlarged at all, although the bullae (capsules surrounding middle and inner ears) and associated bones may be. This is particularly noticeable in some of the desert-dwelling rodents such as kangaroo rats, in which the bullae are considerably enlarged. This brings us to a rather interesting point. It has been my observation that, as a rule, desert mammals have better hearing equipment than non-desert mammals. This may be revealed either in larger external ears, or larger bullae and associated bones. We have seen that the Allen jackrabbit has large external ears, as have also the desert fox, the ring-tailed cacomistle, and a southwestern form of white-footed mouse. The kangaroo rats, mice, and pocket mice offer excellent examples of mammals which have enlarged bullae. These are jumping forms and it might be expected that this increased size might have to do with saltation. However, as mentioned above, dissection shows that the semicircular canals are no larger in these mammals than they are in non-jumpers of similar body size. On the other hand, the tympanic membrane is relatively very large, and the bullae and mastoid bones form what appear to be large resonating chambers in kangaroo rats and mice. The conclusion seems to be that desert mammals are

equipped to hear better than other mammals. Just why they might need better hearing is not entirely clear, although it may be that they are forced to forage so far from shelter that only very sensitive ears will warn them of danger in time to escape.

A further comparison of ear size in desert mammals with that of non-desert mammals leads one to wonder whether temperature is really the controlling factor in determining ear size. The average annual temperature in the Southwest and Southeast is approximately the same. Minimum temperatures do not differ much, and although a part of the desert country experiences higher maxima, on the whole the maximum temperatures of the two areas are quite similar. Yet we find many large-eared mammals in the Southwest and relatively few in the Southeast. Undoubtedly there are many other factors present, such as humidity, abundance of vegetation, etc., which have considerable influence ; as with many problems in natural history, experiment and observation should eventually supply the correct answers.

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## Test Your Nature Lore

### *Answers to Questions on Page 78.*

1. True. The so-called seventeen-year locust is a cicada, belonging to the order Homoptera, and the term locust more properly applies to grasshoppers, members of the order Orthoptera.
2. True. Both the crayfish and the lobster are crustaceans of the order Decapoda.
3. True. All spiders possess spinning glands and although they do not all construct webs, all of them do spin silk.
4. True. One of the fundamental characters of the order Hexapods, the insects, is the presence of three pairs of legs.
5. False. The black widow spider is a small one, usually about a half-inch in diameter.
6. False. The lady-bird beetle feeds upon other insects, primarily aphids, and is therefore a beneficial insect.
7. False. Only female mosquitoes of some species feed on blood. The males, and to a certain extent the females, feed on the juices of ripe fruits and other sweet substances.
8. True. There are more than 600,000 described species of insects and at least two or three hundred thousand yet unknown.
9. False. The common house-fly does not have biting mouth-parts but it is a dangerous carrier of disease because filth adheres to its feet and may be transferred to food.
10. False. The term "bug" is properly applied only to members of the order Hemiptera (chinch-bugs, bedbugs, stink-bugs, etc.).





## Hawk vs. Snake

While walking along the shore of Maple Lake recently I was attracted by a flapping of wings some distance ahead. Through the glass it appeared to be a large hawk partly hidden by a small bush. The bird seemed to be unable to rise, and after each attempt would settle back to the ground. My companion and I were able to approach to about 75 feet from the hawk, a broad-wing, before it saw us and flew away. Curious as to what had caused the peculiar actions, we located the spot and found a partly eaten snake with its tail coiled three or four times around a stem of common ragweed. Some 18 inches of the snake remained, about a third of the head end having been eaten, and the grip of the snake's tail on the weed, had prevented the hawk from carrying it away. I do not know what kind of a snake it was.

--C. O. Decker

## Nautical Butterflies

On the afternoon of August 10, 1938, I was fishing on Lake Michigan four miles south of Saugatuck, Michigan, and about 1000 feet from shore. It was early in the afternoon and fishing was slow. For that reason I became interested in some remarkable cloud formations that were appearing above the western horizon. Suddenly, against this dark background of clouds a small object appeared, flying about five feet above the surface of the lake. Thinking that it was a bird I ignored it at first. A moment later, looking at it more sharply, I realized that it was moving too slowly for a small bird, and quickly discovered that it was a butterfly.

From the moment that I first noticed

it in the distance it flew a direct course toward the boat, never deviating more than a few inches from a straight course, passing the boat about six feet astern. As it passed the boat it dropped to within three or four inches of the surface and suddenly came to rest upon the water about fifteen feet from the boat on the shoreward side. It proved to be a specimen of the red admiral (*Vanessa atalanta* L.), resting like a mounted specimen ready for the cabinet. It rested thus for about two minutes, then rose and flew off toward shore. Again it flew in a straight course and not the characteristic roving flight used over open country. When arising, the first motion noticeable was a raising of the body and then a very swift upward stroke of the wings.

This is what puzzles me. If it merely wanted to rest why did it not alight upon some part of the boat or upon the tip-end of the long cane pole I was using? It came to rest about eight feet to the left of the pole and on a line with its tip. Or did it alight to drink and refresh itself? This I could not observe because it was facing directly away from me.

There was no breeze that day and consequently no ripples or waves on the water, only a slight ground swell running. Can this be a clue to trans-oceanic migrations? I wonder.

While fishing on Lake Koshkonong, Wisconsin, on August 18, 1940, about 10 A.M., a specimen of the common cabbage butterfly (*Pieris rapae*) came to rest upon the surface of the water about fifty feet from my boat. This was about four hundred feet from shore. I was rowing at the time and lost no time in approaching it, managing to get to

(Continued on page 95)



### Sunday Afternoon Lectures

The following series of free public lectures will be given in the auditorium of the Chicago Academy of Sciences Sunday afternoons at 3:00 o'clock, starting on Sunday, November 2, and continuing through December 14. The doors of the auditorium will be opened at 2:45 and closed at 3:00 or before if the hall is filled. A section will be reserved for members until 3:00 o'clock.

Nov. 2: **432,000 Ticks—The Power Behind Your Watch**, J. H. Lund, Chicago. Slides.

Nov. 9: **Nature's Western Playground**, Ted Phillips, Chicago. Motion pictures in natural color accompanied by appropriate music.

Nov. 16: **Through the Amazonian Jungle**, Miss Henriette Mertz, Chicago. Motion pictures in natural color.

Nov. 23: **A Visit with the Nesting Birds of the Southwest**, E. R. Blake, Field Museum of Natural History. Natural color slides.

Nov. 30: **Exploring in the Upper Air**, O. C. Durham, Abbott Laboratories. Slides.

Dec. 7: **Strategic Minerals in the Present World Crisis**, Dr. Arthur L. Howland, Department of Geology, Northwestern University. Slides.

Dec. 14: **The Migratory Water Fowl Program of the Illinois Natural History Survey**, Dr. T. H. Prison, Chief, Illinois State Natural History Survey Division. Slides and motion pictures in color.

### New Trustee

At the annual meeting of the Board of Trustees, Robert J. Thorne was elected a Trustee of the Academy for a term of seven years. Mr. Thorne is well known in Chicago as a past-president of Montgomery Ward and Company, past-president of the Geographic Society of Chicago, and Chairman of the Chicago Regional Committee of United China Relief.

### Gifts to the Library

From Archibald E. Freer, a sustaining member of the Academy, the library recently received a set of Naumann's *Naturgeschichte der Vögel Mit teleuroas*, 12 volumes, folio, with many excellent color plates; and from the estate of the late Bertha E. Jaques, a former sustaining member, fifty books, approximately forty pamphlets, and several long runs of periodicals in natural history. These accessions are valuable and useful additions to the Academy's library.

Readers of *The Chicago Naturalist* are invited to make use of the library. The new acquisitions, including books reviewed in the *Naturalist*, are available in the reading room.

### Exhibits in the Museum Lobby

A new method for finding vitamin A in various parts of the human body was demonstrated in photographs and apparatus displayed in the museum lobby during the month of July. The exhibit

was made possible by the cooperation of Doctors Karl A. Meyer, Hans Popper, and Alex B. Ragins, codiscoverers of the new technique at the Cook County Graduate School of Medicine.

Results of current research on hay fever and some of the more common causative agents of this seasonal disorder were shown during August and September with the assistance of O. C. Durham of the Abbott Laboratories, who furnished apparatus, samples, and technical data, and Anna Pedersen Kummer, who supplied herbarium specimens of plants with offending pollens. Of special interest was the so-called "sky-hook," an apparatus for collecting samples of pollen from high altitudes by means of an airplane. Mr. Durham's lecture on November 30 will include a description of its use.

Watch the cases on the north and south walls of the lobby for future exhibits of special or timely interest.

## New Members

The following have recently become members of the Academy:

*Life:* Gerard Darrow.

*Sustaining:* Joseph S. Beck, John Nash Ott, Jr., William H. Quelch, and Robert J. Thorne.

*Associate:* Charles F. Ayer, Leslie Banks, Emil G. L. Beer, Maurice Bristol, Sidney Camras, A. B. Congdon, Dr. Victor H. Dropkin, Henry Dybas, Matthew Feiler, William J. Gerhard, Dr. James Morgan Grove, A. Herz, J. L. Hill, Richard Kostka, Emil Liljeblad, Otto Lorenz, Arthur McElhose, John Mathewson, Miss L. A. Nowak, Miss Grace E. Peebles, Laddie Radek, Mrs. Margret Rehberg, V. G. Sasko, Sister Mary Bertha, Herbert S. Ullmann, Rupert L. Wenzel, C. Omar Whaley, and Alex K. Wyatt.

## New Publication

"An Ecological Study of the Floor Fauna of the Panama Rain Forest," by Eliot C. Williams, Jr., assistant to the director of the Academy, was published

on August 15, 1941, as Volume 6, Number 4, of the *Bulletin of the Chicago Academy of Sciences*. This is a technical study of the minute organisms which live in the surface debris of the rain forest or "jungle." Price 30 cents per copy. Active members of the Academy may receive it free upon request.

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Dr. Donald M. Hatfield, Curator of Mammals, visited western museums during July for the purpose of carrying on research concerned with the mammals of Arizona. Dr. Hatfield spent the greater part of his time at the Museum of Vertebrate Zoology at the University of California in Berkeley, but also visited the California Academy of Sciences in San Francisco, the Los Angeles Museum, and the Colorado Museum of Natural History in Denver.

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During the latter part of August Dr. Eliot C. Williams, Jr., visited museums in New York, Brooklyn, Philadelphia, and Washington for the purpose of studying their educational programs and current techniques in exhibition.

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During parts of June and July Dr. and Mrs. H. K. Gloyd collected reptiles and insects in south-central Arizona, chiefly in the vicinity of Superior and Florence. They stayed at the Boyce Thompson Southwestern Arboretum which was part-time headquarters for the Offield-Beaty Expedition of 1940. Because of seasonal differences correlated with the activities of desert animals, the specimens obtained by the Gloyds form desirable additions to the collections made last year during the month of May. A number of species of nocturnal snakes are well represented and among the insects are some especially interesting nocturnal orthoptera. Some of the Kodachrome motion pictures resulting from this trip are to be made available for educational use by Coronet Productions, Glenview, Illinois.



Koehne Photo

## To New Post

Earl G. Wright resigned his position as curator of exhibits at the Academy to become director of the Neville Public Museum, Green Bay, Wisconsin, and took over his new duties on July 1.

During the fourteen years in which he was associated with the Academy, Mr. Wright designed and constructed many of the habitat groups now on display in the museum. He was a member of several of the Academy's field expeditions and is well known as a bird artist and photographer.

The scope of the Neville Public Museum includes art and archaeology as well as natural history. Its exhibits include North American Indian archaeology and ethnology, historical objects and documents of local interest, firearms, coins, a synoptic series of Wisconsin birds, and collections of

als, fossils, mammals, reptiles, and fishes. The art gallery contains permanent exhibits and rotating art shows which are changed monthly throughout the year.

Mr. Wright's experience and diversity of interests make him well fitted for developing a museum of this kind and his many friends in Chicago wish him success in his new position.

Miss Mary Jane McMeans joined the staff of the Academy as librarian on March 1, 1941. Miss McMeans attended the University of Washington and Northwestern University and was graduated from the latter institution in 1937. Before coming to the Academy she was a teacher in the high schools of Williams Bay and Edgerton, Wisconsin, and a librarian at the Evanston Public Library and with Swift and Company, Chicago.

Raymond A. Kane, compositor and pressman, was placed in charge of the Academy's printshop in April. The printshop has recently been moved from its old location into a larger room in the north basement where more adequate facilities are available.

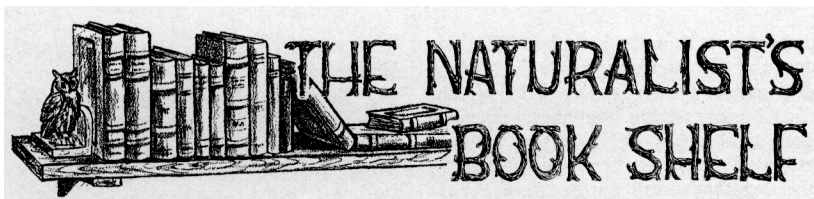
Sherlock Holmes is now employed by the Academy as carpenter, painter, and general utility man in the laboratories.

Miss Virginia G. Haskins, secretary to the director since January of this year, resigned on September 20 to accept a position with E. I. DuPont de Nemours, Inc.

Miss Haskins is succeeded by Miss Joan Markham who attended Northwestern University and was employed until recently by an architect's firm in Chicago.

## Karl Maslowski Lecture November 3

The Illinois Audubon Society presents Karl Maslowski of Cincinnati, Ohio, in a lecture on birds illustrated with motion pictures in color at the Academy on the evening of November 3.



#### THE SCIENTIFIC PHOTOGRAPHER

By A. S. C. Lawrence

Cambridge University Press, Macmillan Co., New York, 1941. x, 180 pages, 83 figs., 5 plates, numerous tables and 2 appendices. \$3.75

Dr. Lawrence has provided us here with a succinct reference work covering nearly every phase of the photographic process. There are chapters on emulsions, lenses, camera mechanisms, color photography, developing and printing, and an excellent practical discussion of the problems involved in making a picture. In all, the book will probably prove as useful to the amateur as it will to the scientist, though I am somewhat doubtful that no more than "an elementary knowledge of chemistry and physics," as stated in the preface, is necessary for the understanding of such formulae as that for 2 :2'-diethyl tri-carbothiocyanine.

Despite the title, only the last chapter, some 27 pages, deals specifically with the scientific applications of photography. Dr. Lawrence explains this in part in the preface: "... there is no special scientific photography for scientists. All the branches of the subject used by amateurs and professionals are used at some time in scientific work."

The five color plates are very well done. The author deals with the Dufaycolor process in some detail but, unhappily, the plate made from a Dufaycolor transparency does not seem to compare with the one made from a Kodachrome transparency.

I would recommend *The Scientific Photographer* to photographers with an interest in science and to scientists with an interest in photography. Both will find it informative.

—Donald M. Hatfield

#### GUIDE TO THE FISHES OF THE GREAT LAKES AND TRIBUTARY WATERS

By Carl L. Hubbs and Karl F. Lagler, with illustrations mostly from original photographs by Frank N. Blanchard

Cranbrook Institute of Science, Bull. no. 18, 100 pages, 118 photographs (17 plates), 33 line drawings, bibliography and index. In cloth, \$1.00, in paper, \$0.50.

This compact streamlined handbook sets a new standard in completeness, logical arrangement, clarity of presentation, excellence of illustration and general helpfulness to the student of ichthyology. Its purpose as stated by the authors is "to provide a means by which all persons interested may: (1) learn the characters of importance for identification of freshwater fishes and the methods by which they may accurately be distinguished; (2) 'key' the Great Lakes species to their correct taxonomic designation; (3) become acquainted with their known geographic range, and (4) find an ecological annotation indicating the habitat in which each form most frequently lives." The authors have hewed to the line in this stated intention and have produced a model of usefulness. The first portion is devoted to a complete explanation of the methods of measuring body parts, counting fin rays and scales, and distinguishing anatomical features necessary for working the keys. Two hundred and twenty-nine species and subspecies are keyed out first to families and then to genera, species and subspecies. Through the keys and the statement of methods are interspersed well placed references to 33 clearly executed line drawings and 118 good photographs. A distribution map with 52 in-

licated localities is included. The account of distribution gives both the general range of each species and the local distribution within the area. Succinct ecological notes indicate the temperature of the water, the type of bottom, the vegetation and the depth of occurrence for the bodies of water in which each species is found. The amateur ichthyologist is saved from the confusion of reading long technical descriptions and perusing lists of synonyms. These are omitted but the professional ichthyologist may refer to 132 well chosen references for this information. The index with 892 references to text pages and figures and containing scientific and common names of species, anatomical terms, and ecological data is most usable.

The volume comes very appropriately from the Division of Ichthyology, Museum of Zoology, University of Michigan, where the senior author has for many years accumulated a large and complete collection of the fishes of the area and a wealth of data concerning distribution and ecology. The helpful attitude of the authors is expressed in the following sentences: "Our services are at the disposal of critical workers for checking determinations" and "The authors will be pleased to supply detailed references and data needed by fellow workers and to cooperate in preparing species lists for any region."

—C. L. Turner

#### BUTTERFLIES

A Handbook of the Butterflies of the United States, Complete for the Region North of the Potomac and Ohio Rivers and East of the Dakotas.

By Ralph W. Macy and  
Harold H. Shepard

The University of Minnesota Press,  
Minneapolis, 1941, vii, 247 pages, illus.,  
\$3.50.

This handsome book includes all of the species of butterflies known to occur in the United States and adjacent Canada east of Nebraska and the Dakotas and south as far as the northern

borders of Missouri, Kentucky, and Virginia.

A well written introduction deals with general information and interesting facts about butterflies, methods of collection and identification. Workable keys for the identification of species lead one to a discussion of the individual species, of which there are 189. A number of references for each species give the source for the original description and several later works. Detailed descriptions of each species, both adult and larval forms, its distribution, life cycle, and data on its natural history, provide valuable information for both the professional biologist and the amateur. Excellent illustrations—38 black and white photographs, 7 figures, and four color plates—add much to the value of the book. The reviewer feels that this is a book which should have wide appeal to teachers, zoologists, and all those who are interested in natural history.

—Eliot C. Williams, Jr.

#### ULTIMA THULE—FURTHER MYSTERIES OF THE ARCTIC

By Vilhjalmur Stefansson

The Macmillan Company, 1940, 383 pages, illus.  
\$3.50

The book is essentially an attempt by Stefansson, the well known Arctic explorer, to vindicate two of his predecessors in the field. Pytheas of Massilia, now Marseilles, lived about 340 B.C. and for two thousand years was considered to be the champion liar of antiquity because he reported that after traveling for six days beyond the northern extremity of Britain and reaching a place called Thule he found the summer there not greatly different from that in the Mediterranean countries. To the ancients this was incredible so firmly fixed was their conception of the earth as divided into five zones: an uninhabitable torrid zone and two frigid zones, where life was equally impossible, separated by two temperate zones. Stefansson draws on many fields of

knowledge to present interesting and convincing evidence that the Thule Pytheas reached was Iceland and that his claims about this island were well founded.

It will be surprising to many to learn that Columbus was also an Arctic explorer. His claim that he visited Iceland has been used to prove that he was a liar. Drawing again on all the available sources Stefansson presents evidence which indicates that Columbus reached not only Iceland, which lies on the Arctic Circle, but also Jan Mayen Island, located even farther north. The author goes on to discuss the Arctic and its climate, showing that misconceptions extant in the time of Pytheas and still believed in the days of Columbus—have persisted to the present, resulting in unjustified attacks on the claims of these two men. The array of facts about the Arctic and its climate which Stefansson marshals from his own experience, and the narratives of others who have had first-hand experience in the Arctic, should go far toward dispelling the belief that the Arctic has no summer, as well as correcting other misconceptions about those fascinating regions. *Ultimo Thule* should prove enjoyable reading to anyone interested in the Arctic or in voyages of exploration.

—Albert A. Barden, Jr.

#### FOUNDATIONS OF BIOLOGY By

Loran Loss Woodruff

Macmillan Company, New York, 1941, 750 pages, 469 figs. \$3.75

Goethe once said: "Wonder is truly the mother of wisdom, for once the capacity for wonder slips away, one is prone to become blasé, uncomfortably sophisticated, and intellectually slothful." After reading Woodruff's sixth edition of *Foundations of Biology*, I believe the above quotation defines the attitude of mind with which the author hoped his readers would approach this new text.

Woodruff has maintained a text which presents the professional as well

as the student reader with a renewed appreciation of the scientific method, the part it has had in the intellectual life of the race, and the contributions of the biological sciences to the solution of some contemporary problems. At first glance, the table of contents appears to bear the label, "same old stuff." Well, it is. It is the "stuff" that has remained after many years of trial and elimination by a phalanx of intelligent men and women!

The 1941 edition reflects progress by devoting adequate space to the sciences of ecology, genetics and to the sociological aspects of biology. A delightful, absorbing history of biology terminates 750 pages of interesting and informative reading.

The reviewer registers a single complaint: the sciences of eugenics and endocrinology, which have made "league" progress during the last few years, were, in my opinion, inadequately discussed.

The sixth edition is considerably longer than previous editions and every section has been carefully revised. More and new illustrations have been added to a text already characterized by excellent figures. These are extremely helpful in visualizing relations that are often not well expressed by much more elaborate illustrations contained in commonly used texts of this type.

The main scheme of the book remains the same, but the new material, especially that which deals with comparative anatomy, plant structure and function, and genetics has been so well integrated with the old that it is virtually a new book, coherent, readable and direct.

—Virginia G. Haskins

#### PLAGUE ON US

By Geddes Smith

The Commonwealth Fund, New York, 1941, 375 pages, \$3.00.

Geddes Smith has given a graphic account of the struggle against epidemic diseases since earliest historic times. It is accurate and shows clearly and under-

standably to the layman what has been accomplished in the conquest of the plagues that have devastated the world. He emphasizes the need for eternal vigilance to prevent their return. It is a book which all interested in the prevention of disease should read.

—Nathan Smith Davis, III

#### THAT NONE SHOULD DIE By

Frank G. Slaughter

Doubleday, Doran & Company, Inc., New York, 1941, \$2.75

This novel by a Florida physician tells of the life of a doctor of medicine as an intern and resident and of his difficulties in getting started in practice with the help of a part time job in a politically controlled local government hospital. It shows how the attending staff of such institutions is dominated by doctors who are active in party politics rather than by the more able and best qualified members of the profession. It then recounts his experiences under a politically controlled compulsory medical service program. It shows how the politicians cater to the political doctors, dope peddlers, grafters and incompetents and persecute and prosecute all members of the profession who try and are qualified to render the best type of medical service. Finally the morbidity and mortality figures become so high that there is a great scandal. Then comes a change in the law and the medical profession is put in control that public health and medical services may again attain at least the standards that existed before the politicians took them over.

The author believes that group practice will solve all problems connected with care of the sick. To date, however, voluntary groups have been most effective in rendering diagnostic service and special types of treatment, including surgical. The groups have not replaced the family doctor and their results have been best when they have had his whole hearted assistance and cooperation.

—Nathan Smith Davis, III

#### FIRST AID IN EMERGENCIES

By Eldridge L. Eliason, M. D.

J. B. Lippincott Co., Philadelphia, 10th edition, 1941, 260 pages, 126 illus. \$1.75.

This is an excellent handbook for adults and young people who need sane and safe information about first aid in emergencies. Members of first aid squads, Girl and Boy Scouts, and campers will find it of great value.

#### A BEHAVIOR STUDY OF THE COMMON TERN

By R. S. Palmer

Boston Society of Natural History, Proc., vol. 42, no. 1, pp. 1-119, charts 1-2, pls. 1-14.

This report concerns a study made during the summers of 1938 and 1939 on Sugarloaf Island off the coast of Maine. By trapping, marking, and observing the birds from blinds, Dr. Palmer has been able to learn much concerning the breeding behavior of the common tern.

Studies of this sort should be made of more of our native birds, particularly those that nest in colonies. The sooner we can achieve an understanding of the bases of animal behavior, sociological and otherwise, the sooner, perhaps, will we be able to understand our own group idiosyncrasies and to control them.

There are a number of line drawings at the end of the paper showing some aspects of tern behavior. They were traced from projected photographs and undoubtedly result in a considerable saving since halftones are more expensive than line cuts. It seems to me that authors of scientific papers might follow Dr. Palmer's example and include more such illustrations in their works. The cost would not be prohibitive, as it would be if halftones were used.

—Donald M. Hatfield



## A FIELD GUIDE TO WESTERN BIRDS

By R. T. Peterson

Houghton Mifflin Co., Boston, 1941. xx, 240 pages, numerous illustrations. \$2.75.

For bird students of the West, from the Rockies to the Pacific Coast, Mr. Peterson's latest field guide will fill a niche not previously completely occupied. Handbooks by Hoffman and by Bailey have been the standard references for the West, but both almost require a bird in the hand for proper identification. The new Field Guide is similar to the one by Mr. Peterson on eastern birds in that it permits long-range identification on the basis of a few more or less obvious characters. As such it supplements previously published handbooks.

The drawings are for the most part comparable to those of the eastern field guide. In some there is an indication of less attention to detail and more to general impressions. Perhaps Mr. Peterson is changing from a bird painter into an artist. The color plates, six in number, are good and, in the copy at hand, the colors are remarkably accurate.

The problem of identifying subspecies in the field is taken up at the end of the book, where the author explains why he has in large part simply ignored them—"... the problem is not one for a beginner." However, he does include a complete list of subspecies at the end of this last section, with scientific and common names and distribution.

—Donald M. Hatfield

## ANIMALS THROUGH THE YEAR BY

Margaret Waring Buck

Rand McNally and Company, Chicago, 1941. 96 pages, 73 illustrations; 8 in color. \$2.00.

There are very many books about animals—books geared to the juvenile mind. Most of them deal only with outward appearance of the animals, with a dash of natural history thrown in. Others deal with a single kind of animal, often in story form. In *Animals*

*Through the Year* we see a departure from the usual. Here the mammals (only this group is considered) are discussed from the standpoint of the effect of the seasons upon them. The text is divided into four parts, each concerning one of the seasons. Under each of these, a number of common mammals such as gray squirrels, opossums, bears, deer, etc., are considered; some are carried through all four parts.

Miss Buck's drawings, most of which are in black and white on scratch board, are a rather curious mixture of stylized, ornate formality and vigorous, simple modern treatment. The formality is particularly evident in the plants which are pictured in almost all of the illustrations; one is reminded of the illustrations in some of the early herbals. On the other hand, the beautiful simplicity of line in some of the drawings is, in my opinion, to be commended. To be sure, there will be cries that these pictures do not look like the animals. But after all, representation is relative—by no stretch of the imagination can we say that even a photograph of a mammal, a flat piece of paper with black and white marks on it, looks like the mammal itself. I have no doubt the children will get a firmer grasp of the principal characteristics of these mammals from Miss Buck's drawings than they would from any number of photographs.

Rand McNally and Company have done very well with the printing and binding. The large type can be read by even the littlest children while the binding looks as though it would last until they grow up.

—D. M. Hatfield

Books reviewed in this department of *The Chicago Naturalist* are available in the Reading Room of the Academy. The librarian is glad to assist visitors in finding both popular and technical material in their fields of interest. The Reading Room is open from two to five, Mondays through Fridays, and from nine to five on Saturdays.

# THE NATURALISTS CALENDAR OF EVENTS

AMATEUR HERPETOLOGISTS' GROUP, H. K. Gloyd, Chicago Academy of Sciences, Diversey 5871. Meetings at Academy second Tuesday of each month, 8:00 P.M.

CHICAGO ACADEMY OF SCIENCES, Lincoln Park at Clark and Ogden Ave., Diversey 5871.

CHICAGO AQUARIUM SOCIETY, Mr. Harmon K. Greene, Secretary, Plaza 2088. Meetings third Wednesday of each month. 8:00 P.M.

CHICAGO CACTUS SOCIETY, Mr. Frank K. Balthis, President, Garfield Park Conservatory, Kedzie 1281. Meetings last Sunday each month, Garfield Park Conservatory, 3:00 P.M.

CHICAGO ENTOMOLOGICAL SOCIETY, Mr. Alex K. Wyatt, 5909 N. Virginia Ave., Ravenswood 3115.

CHICAGO ORNITHOLOGICAL SOCIETY, Margaret Morse Nice, President, 5708 Kenwood Ave., Plaza 3741. Meetings third Tuesday each month. Eleanor Club, Stevens Bldg, 8:00 P. M.

FRIENDS OF OUR NATIVE LANDSCAPE, Miss R. B. Eskil, 6016 Ingleside Ave., Hyde Park 8313.

GEOGRAPHIC SOCIETY of CHICAGO, 7 S. born St., Randolph 5293.

ILLINOIS AUDUBON SOCIETY, Chicago Academy of Sciences. Diversey 5871.

MARQUETTE GEOLOGISTS ASSOCIATION, Mr. George J. Huss, Secretary, Canal 1828. Meetings at Academy first Saturday of each month, 8:00 P.M.

MID-WEST HORTICULTURAL SOCIETY, Administration Building, Garfield Park, Van Buren 8100. Meetings last Friday each month.

PRAIRIE CLUB, 38 S. Dearborn St., Dearborn 3737.

STATE MICROSCOPICAL SOCIETY OF ILLINOIS, Chicago Academy of Sciences, Diversey 5871. Meetings at Academy third Friday of each month, 8:00 P.M.

WILD FLOWER PRESERVATION SOCIETY, Mrs. R. M. Strong, 5840 Stony Island Ave.

Oct. 9 Chicago Entomological Society. Academy, 8:00 P. M.

Oct. 11 Field Museum. James Simpson Theatre, 2 :30 P. M. "American Holiday with Wild Life," by Dr. Gustav Grahn.

Oct. 13 University Horticultural Society. Austin Town Hall, 8:00 P. M.

Oct. 14 The Geographic Society of Chicago. Lecture at Orchestra Hall, 8:00 P. M.

Oct. 17 State Microscopical Society. "Recent Progress in Medical and Dental Microscopy," by Dr. V. A. Latham. Academy, 7:30 P. M.

Oct. 18 The Geographic Society of Chicago. Luncheon at Palmer House, 12:30 P. M. Lecture by Edward T. Camenisch. Members only.

Oct. 18 Field Museum. James Simpson Theatre, 2:30 P. M. "Along Alaska Trails," by A. Milotte.

Oct. 19 Chicago Entomological Society. Academy library, 2:00 P. M.

Oct. 21 Chicago Ornithological Society. Stevens Building, 8:00 P. M. Speakers: Harry R. Smith and Rudyerd Boulton.

Oct. 25 Field Museum. James Simpson Theatre, 2:30 P. M. "Hunting for Walrus in the Ice Floes," by Carl Dreutzer.

Oct. 26 Chicago Cactus Society. Garfield Park Conservatory, 3 :00 P. M.

Oct. 31 Midwest Horticultural Society. Administration Building, Garfield Park, 8:00 P. M.

Nov. 1 Field Museum. James Simpson Theatre, 2:30 P. M. "From Seashore to Glacier," by Karl Maslowski.

- Nov. 7 State Microscopical Society.  
Technical session, Academy,  
7:30 P. M.
- Nov. 8 Field Museum. James Simpson  
Theatre, 2:30 P. M. "New Worlds  
Undersea," by Vincent Palmer.
- Nov. 9 Annual chrysanthemum show at  
Garfield Park Conservatory,  
free from 8:00 A. M. to 10:00  
P. M.
- Nov. 10 University Horticultural So-  
ciety. Austin Town Hall,  
8:00 P. M.
- Nov. 11 The Geographic Society of Chicago.  
Lecture at Orches-  
tra Hall, 8:00 P. M.
- Nov. 13 Men's Garden Club of the Chicago  
Region. Brevoort Hotel, 12 noon.
- Nov. 13 Chicago Entomological Society.  
Academy, 8:00 P. M.
- Nov. 15 Field Museum. James Simpson  
Theatre, 2:30 P. M. "Florakeys,  
" by James B. Pond.
- Nov. 16 Chicago Entomological Society.  
Academy library, 2:00 P. M.
- Nov. 21 State Microscopical Society.  
Academy, 7:30 P. M., lecture by  
Dr. Ralph Buchsbaum.
- Nov. 22 Field Museum. James Simpson  
Theatre, 2:30 P. M. "Fan  
American Highway," by James  
Sawders.
- Nov. 25 The Geographic Society of Chicago.  
Orchestra Hall, 8:00 P. M.
- Nov. 28 Midwest Horticultural Society.  
Administration Building, Garfield  
Park, 8:00 P. M.
- Nov. 29 Field Museum. James Simpson  
Theatre, 2:30 P. M. "Through  
the Rainbow," by Stuart D.  
Noble.
- Nov. 30 Chicago Cactus Society. Garfield  
Park Conservatory,  
3:00 P. M.

(Continued from page 85)

within two feet of the specimen without disturbing it in any way. It proved to be a female, its wings fully expanded on the surface of the water and facing away from the sun. The only noticeable movement, all the time it was resting, was an alternate raising and lowering of its antennae, but never higher than about a 45° angle from the horizontal plane of its body.

I had no timepiece but am sure that it remained on the water well over ten minutes. I was mainly interested in its manner of take-off and when that occurred there was no apparent preparatory maneuver or motion of any kind. Just a quick elevation of the whole body and a down thrust of the wing as though it stood up on them, the two pairs of wings almost meeting below the body. The following up and down stroke appeared to be only to the horizontal.

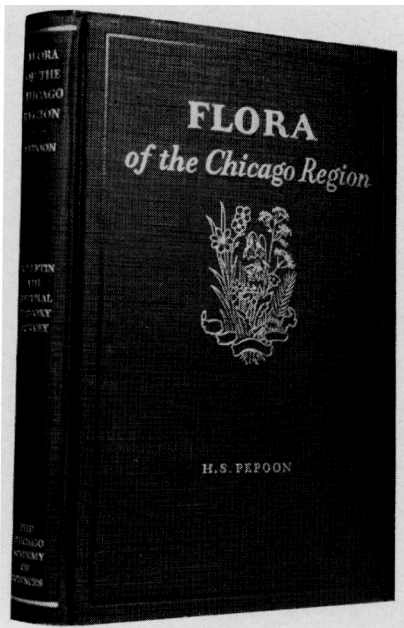
This specimen was flying from east to west across the lake, which, at that point, is about three miles wide. This distance should not be so tiring, for the powers of flight of this species, as to cause it to alight upon the surface of water.

In the case of the red admiral the water surface was smooth, but in this case there were small ripples on the surface which did not disturb the butterfly in the least. Its wings never broke contact with the water until it flew away.

—Edward F. Lustig

*We regret to report that Edward F. Lustig, writer of the foregoing notes, and a member of the Chicago Entomological Society, died on June 18, 1941, at the age of fifty years, after a short illness due to a heart ailment. The recent depression caused him to forego much of his entomological activity and he had only recently resumed his association with other entomologists. We greatly regret the loss of a friend and promising student and our sympathies are extended to his wife and daughter.*

Chicago Entomological Society,  
J. L. Hill, Secretary



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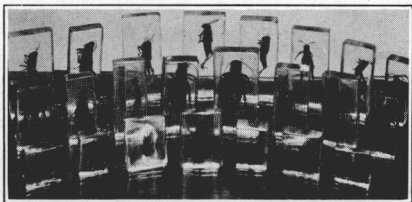
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